

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/059759 A3

(51) International Patent Classification⁷: **H01M 2/02, 2/10**

(21) International Application Number:
PCT/IB2003/005962

(22) International Filing Date:
10 December 2003 (10.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02080581.8 30 December 2002 (30.12.2002) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NOTTEN, Petrus,**

H., L. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **HACK, Martinus, J., J.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **MULDER, Willem, J.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

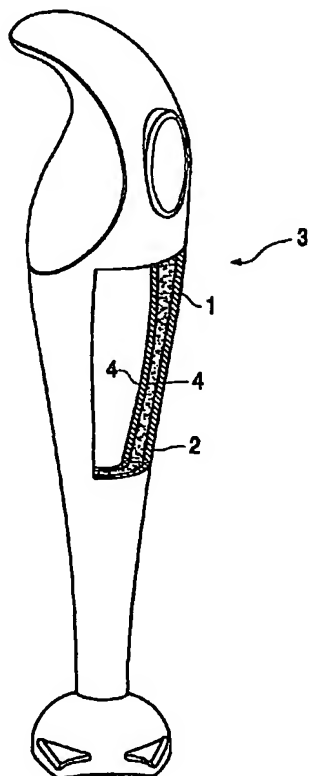
(74) Agent: **VAN WERMESKERKEN, Stephanie, C.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **ELECTROCHEMICAL ENERGY SOURCE INTEGRALLY FORMED IN A NON-CONDUCTIVE CASING AND METHOD OF MANUFACTURING SUCH AN ELECTROCHEMICAL ENERGY SOURCE**



(57) Abstract: The invention relates to an electrochemical energy source integrally formed in a non-conductive casing, comprising: a first current collector embedded in said casing and further coupled to an anode, a second current collector embedded in said casing and coupled to a cathode, and an electrolyte and a separator between said anode and said cathode, wherein the casing comprises a portion of a housing of an electronic device. The invention further relates to a method of manufacturing an electrochemical energy source integrally formed in a non-conductive casing, wherein the casing comprises a portion of a housing of an electronic device, comprising the steps of: A) applying at least one electrochemical cell to said casing, which electrochemical cell comprises an anode, and a cathode, B) realizing a suitable configuration for said electrochemical cell, C) applying an electrolyte to said casing, and D) adapting the orientation of said casing such that said formed electrochemical energy source is at least substantially surrounded by said casing.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declaration under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG,

Published:

- with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
10 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05962

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01M2/02 H01M2/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 644 207 A (LE BINH Q ET AL) 1 July 1997 (1997-07-01) abstract; claims 1-20; figure 13	1-9
X	WO 01/82393 A (POLYSTOR CORP ; COUSTIER FABRICE (US)) 1 November 2001 (2001-11-01) the whole document	1-3, 7-10
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 02, 29 February 2000 (2000-02-29) -& JP 11 317221 A (TOSHIBA BATTERY CO LTD), 16 November 1999 (1999-11-16) abstract; figures 1-3	1-3, 7-10
X	EP 1 187 430 A (NOKIA CORP) 13 March 2002 (2002-03-13) the whole document	1-3
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *S* document member of the same patent family

Date of the actual completion of the international search

12 January 2005

Date of mailing of the international search report

18/01/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Reich, C

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05962

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>PATENT ABSTRACTS OF JAPAN vol. 2002, no. 10, 10 October 2002 (2002-10-10) -& JP 2002 170538 A (SONY CORP), 14 June 2002 (2002-06-14) abstract</p>	1-3

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 03/05962

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5644207	A	01-07-1997	CA 2260789 A1	23-10-1997
			EP 0948829 A1	13-10-1999
			ID 19535 A	16-07-1998
			SG 49360 A1	18-05-1998
			TW 501295 B	01-09-2002
			WO 9739491 A1	23-10-1997
			US 6608464 B1	19-08-2003
			ZA 9706953 A	02-03-1998
WO 0182393	A	01-11-2001	AU 7481301 A	07-11-2001
			WO 0182393 A2	01-11-2001
			TW 499769 B	21-08-2002
JP 11317221	A	16-11-1999	NONE	
EP 1187430	A	13-03-2002	JP 2002084075 A	22-03-2002
			EP 1187430 A1	13-03-2002
			US 2002053447 A1	09-05-2002
JP 2002170538	A	14-06-2002	NONE	